

09745690-11600

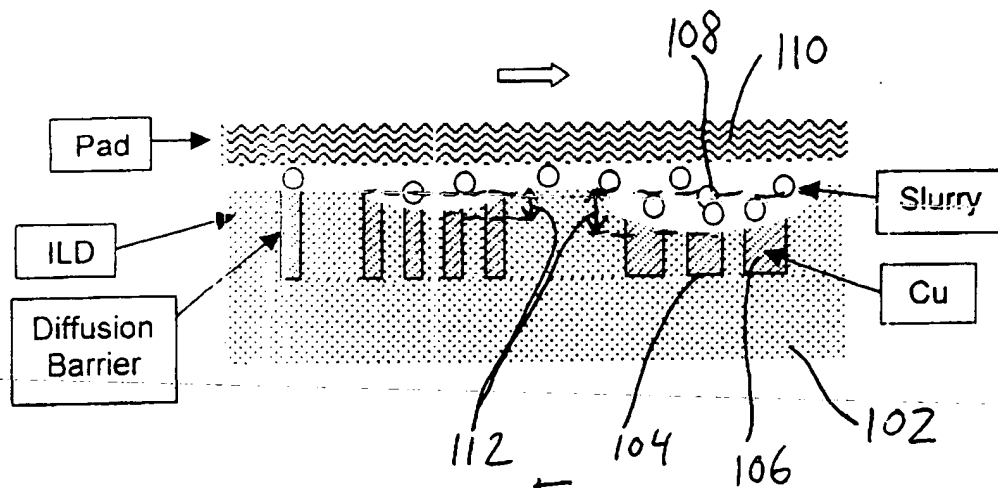


Fig. 1

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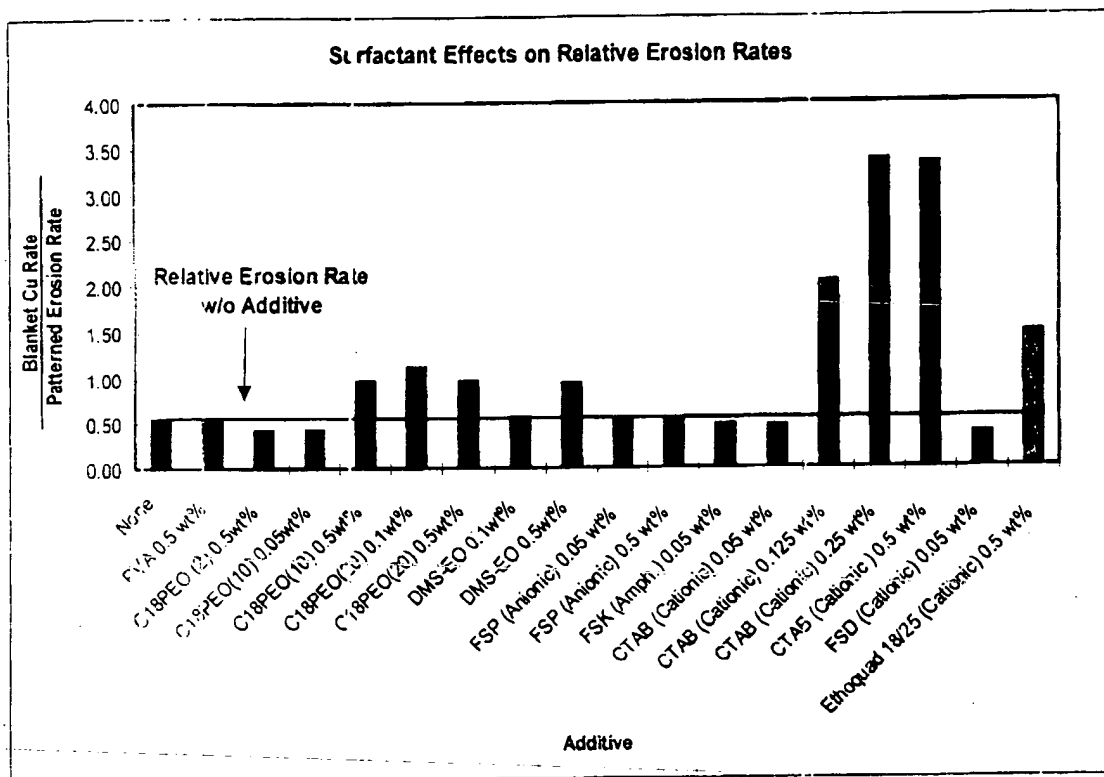
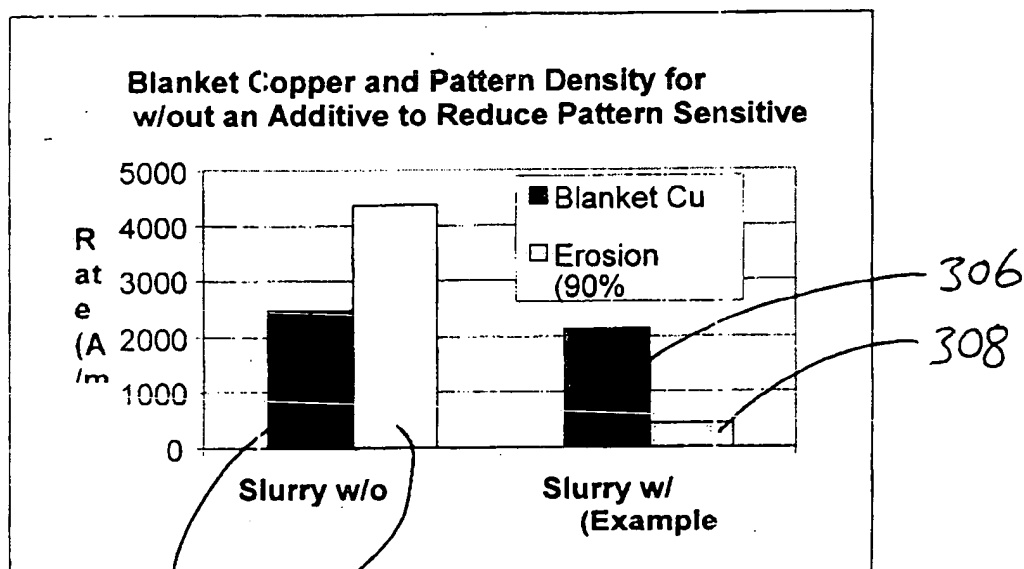


Fig. 2



302 304 Fig. 3

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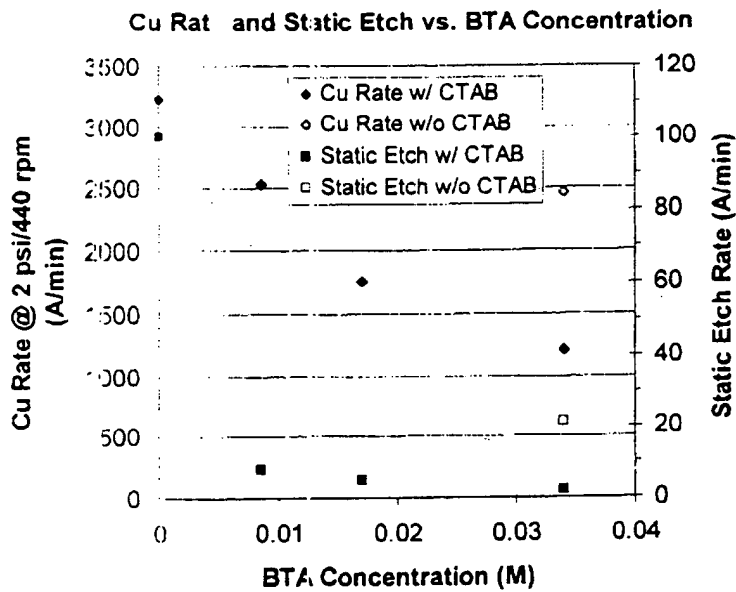


Fig. 4

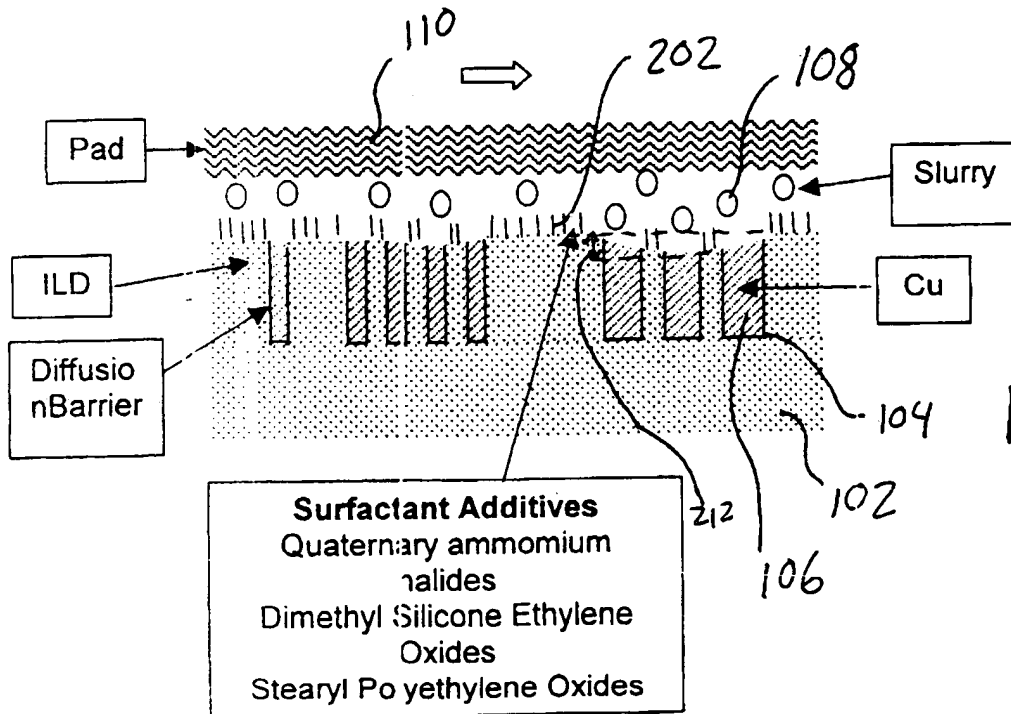


Fig. 5

602

Bring a wafer having a copper damascene structure thereon into contact with a polishing pad

604

Perform CMP on the copper damascene structure with a slurry including a surfactant that reduces the ILD removal rate to a greater extent than the copper removal rate

Fig. 6

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702

Form trenches in a planarized low-k dielectric layer

704

Line surfaces of the low-k dielectric layer with a copper diffusion barrier

706

Form a layer of copper over the diffusion barrier

708

Perform CMP with a slurry containing an additive that reduces pattern sensitive erosion

Fig. 7

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802

Create a mixture by combining an abrasive and an oxidizer with water

804

Add a surfactant to the mixture, the surfactant being characterized in that it reduces ILD removal rate without significantly affecting copper removal rate when chemically mechanically polishing copper with the mixture

Fig. 8

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902

Create a mixture by combining silica, hydrogen peroxide, and
cetyltrimethylammonium bromide

904

Add a chelating agent to mixture

906

Add buffering agent to mixture

908

Add corrosion inhibitor to mixture

Fig. 9

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